

NEW EXOTIC CRANE-FLIES (TIPULIDAE: DIPTERA)
PART XXI¹

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The preceding part under this general title was published in Entomological News, vol. 81: 233 - 240. In the present paper I am discussing further Hexatomine crane-flies, all collected by Dr. Fernand Schmid in many parts of India. As was done in the last paper I am figuring the wing venation of certain species of these flies that had been described in earlier parts of the present series of reports but have not been illustrated. The species discussed at this time belong to the vast genus *Hexatoma* Latreille. Types of the new species are preserved in the Alexander Collection.

Hexatoma (Eriocera) biflavocincta, NEW SPECIES

General coloration of body dull black; antennae, halteres and legs black; wings blackened, with two broad orange yellow bands, cell *M*₁ lacking, *m-cu* far distad.

FEMALE.—Length about 16 mm; wing 13.5 mm; antenna about 3 mm.

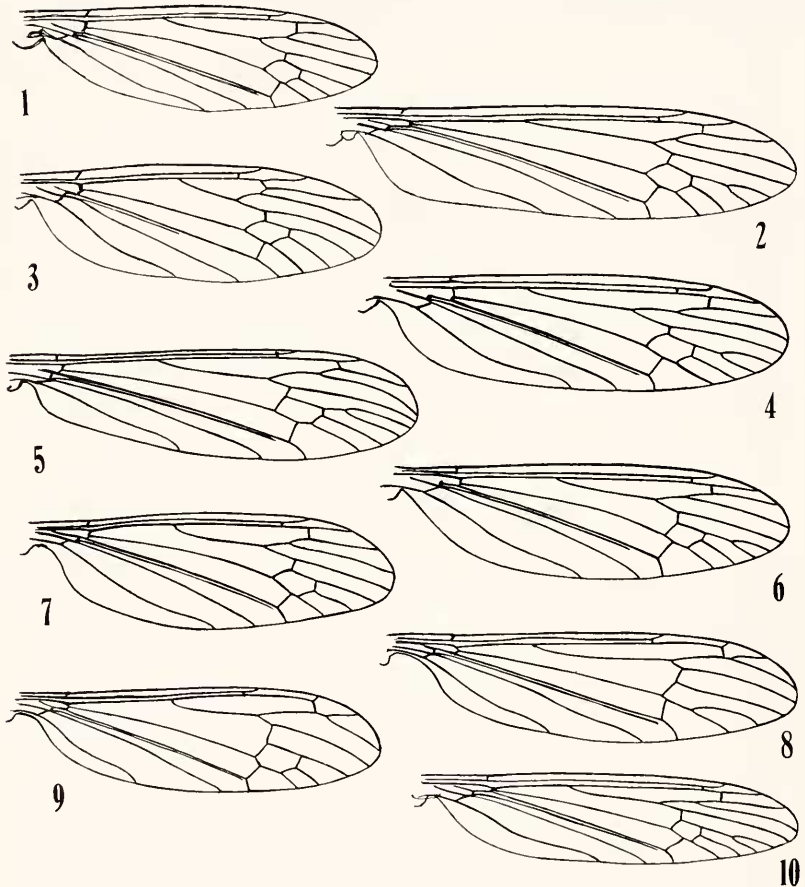
Rostrum black, unusually long, subequal to remainder of head, palpi black. Antennae black, 9-segmented; first flagellar segment nearly equal to the three succeeding segments combined; vestiture of flagellum relatively long, black. Head dull black, including the small narrow vertical tubercle that is directed chiefly cephalad.

Thorax dull black, praescutum with two poorly indicated intermediate blackish gray stripes, posterior half of mediotergite more pruinose; mesonotal vestiture dark, relatively short and delicate. Halteres black. Legs black throughout.

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Wings (Fig. 1) blackened, with two broad orange yellow crossbands, the first at base, extending to shortly beyond the arculus, more extensive in costal field, second band before cord, behind extending to vein *Cu*; veins brown, orange yellow in the brightened bands. Macrotrichia on outer branches of *Rs*, lacking on *M*. Venation: *Rs* long, about one-half longer than *R*; R_{2+3+4} subequal to basal section of R_5 ; R_{2+3} and the transverse R_2 subequal, about one-third R_{1+2} ; cell M_1



FIGURES 1-10, Venation of *Hexatoma* (*Eriocera*) species. Fig. 1. *Hexatoma* (*Eriocera*) *biflavocincta*, new species. Fig. 2. *Hexatoma* (*Eriocera*) *ceroxantha*, new species. Fig. 3. *Hexatoma* (*Eriocera*) *xanthopoda*, new species. Fig. 4. *Hexatoma* (*Eriocera*) *agni* Alexander. Fig. 5. *Hexatoma* (*Eriocera*) *kala* Alexander. Fig. 6. *Hexatoma* (*Eriocera*) *karma* Alexander. Fig. 7. *Hexatoma* (*Eriocera*) *pennata* Alexander. Fig. 8. *Hexatoma* (*Eriocera*) *perlongata* Alexander. Fig. 9. *Hexatoma* (*Eriocera*) *vamana* Alexander. Fig. 10. *Hexatoma* (*Eriocera*) *vulpes* Alexander.

lacking; *m-cu* far distad, about one-fourth its length before fork of M_{3+4} ; *m-cu* about one-half longer than distal section of *Cu*₁; vein *2nd A* long and sinuous.

Abdomen black, second tergite more cinereous on basal half, base of third segment narrowly gray; genital segment and ovipositor fiery orange. Cerci very long and slender, distal half gently upcurved.

HABITAT.—India. Holotype: ♀, Lifakpo, Kameng, North East Frontier Agency, Assam, 3,100 feet, May 29, 1961 (Schmid).

Hexatoma (Eriocera) biflavocincta is quite distinct from other regional species in the loss of cell M_1 of the wings. The most similar of these is *H. (E.) bengalensis* Alexander, 1933 (*bicolor* Macquart, 1838 preoccupied). It should be emphasized that both bands of the wings are orange yellow, the outer one not whitened as in species such as *H. (E.) nepalensis* (Westwood, 1835), and others.

Hexatoma (Eriocera) ceroxantha, NEW SPECIES

Belongs to the *spinosa* group; size large (wing approximately 20 mm); antennae short in both sexes, yellow; general coloration of thorax gray, praescutum with four darker stripes; knobs of halteres dark brown; femora brownish black, bases yellowed, tips vaguely pale; wings brownish yellow, restrictedly patterned with darker; macrotrichia of veins small and sparse.

MALE.—Length about 14-16 mm; wing 18.5-21 mm; antenna about 3.8-4 mm.

FEMALE.—Length about 21-25 mm; wing 19-23 mm; antenna about 3.8-4 mm.

Rostrum dull orange to yellow, palpi light brown, terminal segment brownish black. Antennae short in both sexes, yellow, the terminal segment very slightly darker; male antennae 7-segmented, female 10-segmented. Head brownish gray, vertical tubercle yellowed, of moderate size in male, slightly larger in female; head vestiture long and pale.

Pronotum brownish gray. Mesonotum light gray, praescutum with four stripes, the intermediate pair more brownish gray, separated anteriorly by a narrow brown line, lateral stripes gray, slightly darker than the ground, interspaces more or less darkened, lateral and humeral regions clear gray; scutal lobes slightly variegated by two brownish gray areas, scutellum darkened basally, more obscure orange in female, central part of mediotergite slightly darkened; mesonotum with abundant erect pale setae. Pleura and pleurotergite extensively light gray, anepisternum darker; dorsopleural membrane dark cinnamon brown. Halteres with stem yellow or brownish yellow, knob dark brown. Legs with coxae light gray pruinose, trochanters yellow; femora dark brown to black, bases narrowly more yellowed, tips vaguely and more narrowly pale; tibiae and tarsi brownish yellow to light brown. Wings (Fig. 2) with the ground brownish yellow, stigma pale brown; very narrow and inconspicuous very pale brown washes over cord, over vein *Cu* in cell *M*, and along vein *2nd A*, cell *Sc* clear light yellow; veins

yellow, brown in the patterned areas, *Sc* clear light yellow. Macrotrichia of veins small and sparse, with few on outer ends of veins R_3 to M_4 . Venation: R_{2+3+4} subequal to or shorter than basal section of R_5 ; cell M_1 subequal to or slightly longer than its petiole; *m-cu* longer than distal section of Cu_1 .

Abdominal tergites brown, sternites and hypopygium yellowish brown.

HABITAT.—India. Holotype: ♂, Lachen, Sikkim, 8,930 feet, May 23, 1959 (Schmid). Allotopotype: ♀, pinned with type. Paratypes, ♂ ♂, Lachung, Sikkim, 8,610 feet, July 6, 1959; ♀, Lathong, 6,560 feet, May 15, 1959; ♀, Chateng, Sikkim, 8,700 feet, June 12, 1959; Zema, Sikkim, 8,900 feet, May 24, June 11 - 14, 1959; ♀, Yedang, Sikkim, in *Rhododendron* association, 10,600 feet, June 9, 1959 (all Schmid).

There are numerous species of the *spinosa* group of *Hexatoma* in central and eastern Asia, including several with very long antennae in the male sex, such including *Hexatoma (Eriocera) lanigera* Alexander and *H. (E.) tibetana* Alexander, in western China. The most similar regional species is *H. (E.) fulvoapicalis* Alexander, which similarly has pale antennae and femoral apices, differing in the venation and coloration, especially of the thorax and abdomen.

Hexatoma (Eriocera) latigrisea, NEW SPECIES

Belongs to the *nepalensis* group; general coloration of head and thorax dull black; femora yellow, tips abruptly black; wings brown, base narrowly yellowed, disk with a whitened area, vein R_2 moderately oblique, less than one-half vein R_{2+3+4} ; abdomen with segments one to six extensively nacreous gray with about the posterior fifth black, outer segments uniformly black.

MALE.—Length about 18 mm; wing 14 mm; antenna about 4.1 mm.

Rostrum and palpi black. Antennae of male 8-segmented, scape and pedicel black, flagellum light yellow basally, outer two segments black; flagellar segments long-cylindrical, progressively shorter outwardly, the more proximal ones with numerous long coarse black setae. Head dull black.

Thorax dull black, praescutum with four plumbeous stripes, the intermediate pair narrow, only slightly broader than the interspaces, scutal lobes similarly plumbeous. Halteres brownish black. Legs with coxae and trochanters black; femora yellow, tips abruptly black, including about the outer sixth or eighth, narrower on fore pair; tibiae and basitarsi obscure yellow to brownish yellow, tips more narrowly blackened, remainder of tarsi black. Wings brown, base narrowly yellowed, including the prearcular field and narrow bases of Anal cells, cells *C* and *Sc* darker yellow; a whitened discal area that involves cells R_1 , r and M , its outer edge at fork of R_5 ; veins light brown, more yellowed in the brightened areas. Outer radial veins with very sparse scattered black trichia. Venation: R_2

moderately oblique, less than one-third R_{1+2} or one-half R_{2+3} ; cell M_1 lacking; $m-cu$ at near six-seventh M_{3+4} .

Abdomen with segments one to six extensively nacreous gray, with about the posterior fifth of each black, subterminal segments black, the hypopygium slightly less intensely so.

HABITAT.—India. Holotype: ♂, Kujjalong, Kameng, North East Frontier Agency, Assam, 4,500 feet, June 28 - 30, 1961 (Schmid).

The present species is most similar to *Hexatoma (Eriocera) assamensis* (Edwards), differing especially in the venation of the radial field and in details of coloration of the wings and abdomen.

Hexatoma (Eriocera) neognava, NEW SPECIES

Belongs to the *longicornis* group; size medium (wing about 13 mm); antennae of male elongate, about three times the wing, spinoid setae of the proximal flagellar segments sparse or lacking; mesonotal praescutum light gray with four brown stripes; halteres yellow; femora yellow, tips narrowly dark brown, tibiae and tarsi brownish black to black; wings faintly darkened, cells C and Sc strongly yellowed, a restricted darkened pattern that especially includes the veins; male hypopygium with outer dististyle slender, narrowed gradually into an elongate spine.

MALE.—Length about 10-11 mm; wing 12-14 mm; antenna about 35-40 mm.

FEMALE.—Length about 11-12 mm; wing 11.5-13 mm; antenna about 2.8-3 mm.

Rostrum very small, brown, palpi short, black. Antennae of male very long, approximately three times the wing; scape, pedicel and basal third of first flagellar segment light brown, remainder black; flagellar segments very long-cylindrical, without conspicuous spinoid setae as in related species; in female, antennae short, dark brown or black throughout. Head light gray, in male with a very large oval vertical tubercle that bears long erect pale setae, the tubercle much smaller in the female.

Prothorax brownish gray. Mesonotal praescutum light gray, with four brown stripes, the intermediate pair paler posteriorly; interspaces in male with long erect whitened setae, in female vestiture very small and inconspicuous; scutum and postnotum brownish gray, scutellum slightly more yellowed. Pleura gray. Halteres yellow. Legs with coxae gray, trochanters more infuscated; femora yellow, tips narrowly dark brown; tibiae and tarsi brownish black to black. Wings faintly darkened, cells C and Sc strongly yellowed; stigma brown, very narrow; darker brown seams over and including most veins, more conspicuous along cord, R_s and outer radial veins, veins Cu and $2nd A$ with the adjoining membrane paler brown; veins brown, darker in the patterned areas, more yellowed in costal field. Venation: R_{2+3+4} from about one and one-half to twice R_{2+3} , R_{1+2} and R_2 subequal, cell R_2 at margin about one-half more extensive than cell R_3 ; $m-cu$ shortly beyond

fork of *M*, in cases to one-third its length. One paratype male has an adventitious crossvein in cell R_3 of one wing only.

Abdomen, including hypopygium, dark brown, sparsely pruinose. Ovipositor with valves short and fleshy, as in the species group.

HABITAT.—India. Holotype: ♂, Dhar, Pauri Garhwal, Kumaon, 7,220 feet, August 17, 1958 (Schmid). Allotopotype: ♀, pinned with type. Paratopotypes, one ♂, three ♀♀, on two pins. Paratypes, ♂ ♀, Gery, Pauri Garhwal, 6,890 feet, August 16, 1958; one ♀, Lohajang, Pauri Garhwal, 6,070 feet, August 21, 1958 (all Schmid).

Hexatoma (Eriocera) neognava is most similar to species such as *H. (E.) gnava* Alexander and *H. (E.) verticalis* (Wiedemann), differing most evidently in the armature of the male antennae and in the details of the male hypopygium where the outer dististyle is slender, outwardly narrowed into an elongate spine and the inner style only moderately dilated, its length about two and one-half times the width. The spinoid setae of the male antennae, as above mentioned, are found in the Nearctic *H. (E.) longicornis* (Walker) and *H. (E.) spinosa* (Osten Sacken) and less conspicuously in the regional *H. (E.) verticalis* and *gnava*. These have been discussed and their apparent function described in an earlier paper (Alexander, C. P., and J. T. Lloyd, Pomona College Jour. Ent and Zool., 6: 12 - 37, 1 fig., 3 pls.; 1914).

Hexatoma (Eriocera) xanthopoda, NEW SPECIES

Allied to *flavipes*; general coloration of head and thorax opaque gray, praescutum with four brownish black stripes; antennae of female 11-segmented, flagellum yellow, terminal segment brown; legs yellow; wings brown, with a narrow nearly parallel-sided whitened band before cord, stigmal region with two small yellowed areas; veins strongly yellowed, R_2 oblique, R_s relatively short, less than three times R_{2+3+4} , cell M_1 lacking; abdomen black, bases of intermediate segments broadly light gray, genital segment fiery orange.

FEMALE.—Length about 15 mm; wing 11.5 mm; antenna about 3.6 mm.

Frontal prolongation of head gray, palpi with proximal two segments brown, remainder black. Antennae of female 11-segmented; scape brown, gray pruinose, remainder of organ yellow, terminal segment dark brown; flagellar segments outwardly decreasing in length and diameter, terminal segment about one-half longer than the penultimate, all segments with long black setae. Head light gray, vertex more darkened medially, anterior vertex broad, with three black spots in a transverse row; posterior vertex with abundant black setae.

Pronotum light brown. Mesonotal praescutum opaque gray, with four sub-

nitidous brownish black stripes, the narrow intermediate pair bordered by darker; scutum gray, each lobe with a major blackened area; scutellum and mediotergite opaque brown, posterior fourth of latter light gray, pleurotergite brown, narrowly pruinose ventrally; mesonotum with conspicuous erect black setae on praescutum, scutum and scutellum, the last longest, postnotum glabrous. Pleura dark brown, vaguely pruinose, dorsopleural membrane light brown, darker surrounding the anterior spiracle. Halteres short, dark brown. Legs with coxae dark brown, trochanters brown above, more yellowed ventrally; remainder of legs yellow throughout. Wings (Fig. 3) brown, costal border more yellowish brown; a narrow, nearly parallel-sided white band before cord, narrower in cell R_1 , extending from vein R into cell Cu , not quite reaching vein $1st A$; small vague yellowed areas in outer radial field before and beyond vein R_2 ; bases of cells Cu and $1st A$ pale yellow, slightly including cell $2nd A$ adjoining the vein; veins strongly yellowed, especially at and before cord. Sparse macrotrichia on outer veins from R_3 to M_3 . Venation: Sc_1 ending nearly opposite anterior end of vein R_2 , the latter oblique, subequal to R_{2+3} ; Rs relatively short, less than three times R_{2+3+4} , the latter subequal to basal section of R_3 ; cell M_1 lacking; $m-cu$ at near three-fourths M_{3+4} .

Abdomen black, subopaque; intermediate segments with more than basal half light gray, genital segment fiery orange; ovipositor with valves very long and slender.

HABITAT.—India. Holotype: ♀, Nongrim, Khasi-Jaintia, Assam, 3,500 feet, October 11, 1960 (Schmid).

The most similar species include *Hexatoma (Eriocera) flavipes* (Brunetti) and *H. (E.) homochroa* Alexander, which differ in coloration of the body, wings and veins. Both of these species have the tips of the femora and tibiae darkened.

Hexatoma (Eriocera) agni Alexander

Hexatoma (Eriocera) agni Alexander; Ent. News, 74: 100-101; 1963.

Type from Bongba Khunov, Manipur, Assam. Fig. 4 (venation).

Hexatoma (Eriocera) kala Alexander

Hexatoma (Eriocera) kala Alexander; Ent. News, 73: 210-212; 1962.

Type from Sirhoi Kashong, Manipur, Assam. Fig. 5 (venation).

Hexatoma (Eriocera) karma Alexander

Hexatoma (Eriocera) karma Alexander; Ent. News, 73: 212-213; 1962.

Type from Hkayam Boum, Manipur, Assam. Fig. 6 (venation).

Hexatoma (Eriocera) pennata Alexander

Hexatoma (Eriocera) pennata Alexander; Ent. News, 73: 214-215; 1962.

Type from Sirohi, Manipur, Assam. Fig. 7 (venation).

Hexatoma (Eriocera) perlongata Alexander

Hexatoma (Eriocera) perlongata Alexander; Ent. News, 72: 114-115; 1961.

Type from Bop, Sikkim. Fig. 8 (venation).

Hexatoma (Eriocera) vamana Alexander

Hexatoma (Eriocera) vamana Alexander; Ent. News, 72: 116-117; 1961.

Type from Sathupara, Madras. Fig. 9 (venation).

Hexatoma (Eriocera) vulpes Alexander

Hexatoma (Eriocera) vulpes Alexander; Ent. News, 72: 119-121; 1961.

Type from Kuttalam, Madras. Fig. 10 (venation).

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ABSTRACT.—*Hexatoma (Eriocera) biflavocincta*, new species from India; *Hexatoma (Eriocera) ceroxantha*, new species from India; *Hexatoma (Eriocera) latigrisea*, new species from India; *Hexatoma (Eriocera) neognava*, new species from India, and *Hexatoma (Eriocera) xanthopoda*, new species from India are described and seven species previously described are illustrated.—C. P. ALEXANDER, Entomological Laboratory, University of Massachusetts, Amherst, MA 01002.

DESCRIPTORS: Diptera; Tipulidae; new species from India.